

1. (Currently Amended) An isolated nucleic acid molecule encoding a Rickettsia felis outer membrane protein having a amino acid sequence as shown SEQ ID NO:2 or having 90% amino acid identity with SEQ ID NO:2.

2. (Original) The isolated nucleic acid molecule of claim 1 wherein said nucleic acid is deoxyribonucleic acid.

3. (Original) The isolated nucleic acid molecule of claim 2 wherein said deoxyribonucleic acid is cDNA.

4. (Currently Amended). The isolated nucleic acid molecule of claim 3 wherein said nucleic acid molecule ~~has a nucleotide sequence as shown in~~ comprises SEQ ID NO:1.

5. (Canceled).

6. (Original) The isolated nucleic acid molecule of claim 1 wherein said nucleic acid is ribonucleic acid.

7. (Original) The isolated nucleic acid molecule of claim 6 wherein said ribonucleic acid is mRNA.

8. (Currently Amended) ~~A~~ nucleic acid molecule complementary to ~~at least a portion of~~ the mRNA of claim 7.

9. (Currently Amended) A host cell comprising the nucleic acid molecule of claim 8.

10. (Original) An expression vector comprising the nucleic acid molecule of claim 8.

11. (Currently Amended) A host cell comprising the expression vector of claim 10.

12. (Withdrawn)

13. (Original) A cell comprising the nucleic acid molecule of claim 1.

14. (Original) An expression vector comprising the nucleic acid molecule of claim 1.

15. (Original) A cell comprising the expression vector of claim 14.

16. (Original) A method of increasing expression of Rickettsia felis outer membrane protein in a host cell, said method comprising:

introducing the nucleic acid molecule of claim 1 into the cell; and

allowing said cell to express said nucleic acid molecule resulting in the production of Rickettsia felis outer membrane protein in said cell.

17. (Withdrawn) A method of screening a substance for the ability of the substance to modify Rickettsia felis outer membrane protein function, said method comprising:

introducing the nucleic acid molecule of claim 1 into a host cell;

expressing said Rickettsia felis outer membrane protein encoded by said nucleic acid molecule in the host cell;

exposing the cell to a substance; and

evaluating the exposed cell to determine if the substance modifies the function of the Rickettsia felis outer membrane protein.

18. (~~Withdrawn~~) The method of claim 17 wherein said evaluation comprises monitoring the expression of Rickettsia felis outer membrane protein.

19. (Withdrawn) A method of obtaining DNA encoding a Rickettsia felis outer membrane protein, said method comprising:

selecting a DNA molecule encoding a Rickettsia felis outer membrane protein, said DNA molecule having a nucleotide sequence as shown in SEQ ID NO:1;

designing an oligonucleotide probe for a Rickettsia felis outer membrane protein based on SEQ ID NO:1;

probing a genomic or cDNA library of an organism with the oligonucleotide probe; and

obtaining clones from said library that are recognized by said oligonucleotide probe, so as to obtain DNA encoding a Rickettsia felis outer membrane protein.

20. (Withdrawn) A method of obtaining DNA encoding a Rickettsia felis outer membrane protein, said method comprising:

selecting a DNA molecule encoding a Rickettsia felis outer membrane protein, said DNA molecule having a nucleotide sequence as shown in SEQ ID NO:1;

designing degenerate oligonucleotide primers based on SEQ ID NO:1; and

utilizing said oligonucleotide primers in a polymerase chain reaction on a DNA sample to identify homologous DNA encoding a Rickettsia felis outer membrane protein in said sample.

21. (Canceled)

22. (Withdrawn) A DNA oligomer capable of hybridizing to the nucleic acid molecule of claim 1.

23. (Withdrawn) A method of detecting presence of a *Rickettsia felis* outer membrane protein in a sample, said method comprising:

contacting a sample with the DNA oligomer of claim 22, wherein said DNA oligomer hybridizes to any of said *Rickettsia felis* outer membrane protein present in said sample, forming a complex therewith; and

detecting said complex, thereby detecting presence of a *Rickettsia felis* outer membrane protein in said sample.

24. (Withdrawn) The method of claim 23 wherein said DNA oligomer is labeled with a detectable marker.

25. (Withdrawn) An isolated *Rickettsia felis* outer membrane protein.

26. (Withdrawn) The *Rickettsia felis* outer membrane protein of claim 25 wherein said *Rickettsia felis* outer membrane protein is encoded by a nucleotide sequence as shown in SEQ ID NO:1.

27. (Withdrawn) The *Rickettsia felis* outer membrane protein of claim 25 wherein said *Rickettsia felis* outer membrane protein is encoded by an amino acid sequence as shown in SEQ ID NO:2.

28. (Withdrawn) An isolated *Rickettsia felis* outer membrane protein encoded by a first amino acid sequence having at least 90% amino acid identity to a second amino acid

sequence, said second amino acid sequence as shown in SEQ ID NO:2.

29. (Withdrawn) An antibody or antigen-binding fragment thereof specific for the *Rickettsia felis* outer membrane protein of claim 28.

30. (Withdrawn) A composition comprising the *Rickettsia felis* outer membrane protein of claim 28 or an antigenic portion thereof and a compatible carrier.

31. (Withdrawn) A method of detecting presence of a *Rickettsia felis* outer membrane protein in a sample, said method comprising:

contacting a sample with the antibody or antigen-binding fragment thereof of claim 29, wherein said antibody or antigen-binding fragment thereof binds to any of said *Rickettsia felis* outer membrane protein present in said sample, forming a complex therewith; and

detecting said complex, thereby detecting presence of a *Rickettsia felis* outer membrane protein in said sample.

32. (Withdrawn) The method of claim 31 wherein said antibody or fragment thereof is labeled with a detectable marker.

33. (Withdrawn) A method of preventing *Rickettsia felis* infections by *Rickettsia felis* present in a carrier host, the method comprising administering to the carrier host an amount of a compound effective to modify levels of functional *Rickettsia felis* outer membrane protein in *Rickettsia felis* present in the carrier host.

34. (Withdrawn) The method of claim 33 wherein the compound modifies levels of functional *Rickettsia felis* outer membrane protein by modifying *Rickettsia felis* outer membrane protein gene expression.

35. (Withdrawn) The method of claim 34 wherein modifying *Rickettsia felis* outer membrane protein gene expression comprises exposing the carrier host to a compound which modifies *Rickettsia felis* outer membrane protein gene expression.

36. (Withdrawn) The method of claim 33 wherein the compound is an inhibitor of the functional *Rickettsia felis* outer membrane protein.

37. (Withdrawn) The method of claim 33 wherein the carrier host is a cat flea.

38. (Withdrawn) A method of reducing *Rickettsia felis* infection of a carrier host, the method comprising administering to the carrier host an amount of a compound effective to prevent function of a *Rickettsia felis* outer membrane protein in the carrier host.

39. (Withdrawn) The method of claim 38 wherein the compound prevents function of a *Rickettsia felis* outer membrane protein by modifying *Rickettsia felis* outer membrane protein gene expression.

40. (Withdrawn) The method of claim 39 wherein modifying *Rickettsia felis* outer membrane protein gene expression comprises exposing the carrier host to a compound which

modifies *Rickettsia felis* outer membrane protein gene expression.

41. (Withdrawn) The method of claim 38 wherein the compound is an inhibitor of the functional *Rickettsia felis* outer membrane protein.

42. (Withdrawn) The method of claim 38 wherein the carrier host is a cat flea.